Berlin Mathematics Research Center

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MATH+ Spotlight Talk

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Opinion dynamics with stochastic leaders

(project EF45-1)

Abstract:

We investigate the dynamical changes of opinions in agent-based models under the influence of a small number of leaders, for a finite number of agents as well as in the mean-field limit. The agent's dynamics are described by a bounded confidence model, while the leaders solve an optimal control problem to impact the agent's opinions. Both the dynamics of the agents and the leader are driven by noise. We generalize the connection between the finite-agent and mean-field optimal control problems, showing that, for multiplicative noise and stochastically evolving leaders, the optimal control of the finite system converges to that of the mean-field limit. Moreover, we present a numerical algorithm for approximating the mean-field optimal control.